

IN THE CLAIMS**OFFICIAL****RECEIVED  
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1. (currently amended) A computer method, comprising executing at least the following operations in at least one data processing device:

- using a pre-established DTD corresponding to desired XML; and
- based on the DTD and a plurality of data sources, adding annotations to the DTD to create an annotated DTD, such that an XML document generated from the annotated DTD is guaranteed to conform to the DTD establishing a mapping from lists and scalars corresponding to at least one data source into XML elements and attributes.

2. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 1.

3. (currently amended) A data processing device comprising:

- the at least one medium according to claim 2, and
- at least one processor configured to use the at least one medium to produce the XML document based on the annotated DTD mapping.

4 -6 (canceled)

7. (currently amended) The method of claim 1, wherein at least one of the data sources is a relational database.

8. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 7.

9. (currently amended) A data processing device comprising

- the at least one medium according to claim 8; and
- at least one processor configured to use the at least one medium to produce ~~the~~ XML document based on the annotated DTD mapping.

10. (Currently amended) A method comprising executing the following operations on a data processing device: The method of claim 1, further comprising executing the following operation in the data processing device:

- based on at least one data source, deriving a mapping to convert the data source into XML;
- and
- expressing the mapping in constructs of a mapping language.

11. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 10.

12. (currently amended) A data processing device comprising

- the at least one medium according to claim 11; and
- at least one processor configured to use the at least one medium to produce ~~the~~ XML document based on the constructs mapping.

13-15 (canceled).

16. (currently amended) The method of claim 103, wherein the constructs comprise at least one of a value specification and a binding specifications.

17. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 16.

18. (currently amended) A data processing device comprising:

- the at least one medium according to claim 17; and
- at least one processor configured to use the at least one medium to produce ~~the~~ XML document based on the annotated DTD mapping.

19. (currently amended) The method of claim 103, wherein

- at least one of the constructs comprises at least one parameter;
- the at least one of the constructs is adapted so that a value of the at least one of the parameters is determinable at a time of generation of at least one respective XML element associated with the at least one of the constructs.

20. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 19.

21. (currently amended) A data processing device comprising:

- the at least one medium according to claim 20; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document based on the constructs mapping; and
  - pass the value to the parameter.

22. (currently amended) The method of claim 1, further comprising executing the following operation in the data processing device: associating values and or formulas with ~~the~~ DTD.

23. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 22.

24. (currently amended) A data processing device comprising:

- the at least one medium according to claim 23; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document based on the annotated DTD mapping; and
  - perform the associating operation.

25. (original) The method of claim 22, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct having a repetition symbol at the end.

26. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 25.

27. (currently amended) A data processing device comprising:

- at least one medium according to claim 26; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document; and
  - perform the associating operation.

28. (original) The method of claim 22, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct which is not a #PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

29. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 28.

30. (currently amended) A data processing device comprising:

- the at least one medium according to claim ~~29~~30; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document based on the annotated DTD mapping; and
  - perform the associating operation.

31. (original) The method of claim 22, wherein associating includes associating a value or formula producing a value with each PCDATA, choice list, or attribute definition.

32. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 31.

33. (currently amended) A data processing device comprising:

- the at least one medium according to claim 32; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document; and
  - perform the associating operation.

34. (original) The method of claim 22, wherein associating includes, not necessarily in the following order:

- first associating one or more lists of data objects or formulas producing data objects with a DTD construct;
- second associating at least one of the lists or formulas with at least one variable name; and
- using the variable name as a parameter in at least one other formula.

35. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 34.

36. (currently) A data processing device comprising:

- the at least one medium according to claim 35; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document; and
  - perform the associating operation and included operations.

37. (original) The method of claim 1, further comprising executing the following operation in the data processing device: associating at least one respective environment with a respective XML element to be generated.

38. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 37.

39. (currently amended) A data processing device comprising:

- the at least one medium according to claim 38; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document; and
  - perform the associating operation.

40. (original) The method of claim 37, wherein the at least one environment comprises

- information from a parent XML element of the respective XML element; and
- information from a binding specification of a DTD construct associated with the respective XML element.

41. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 40.

42. (currently amended) A data processing device comprising:

- the at least one medium according to claim 41; and
- at least one processor configured to
  - use the at least one medium to produce the XML document; and
  - perform the associating operation.

43. (currently) The method of claim 37, wherein

- the mapping includes at least one respective specification corresponding to at least one respective XML element;
- the specification comprises at least one parameter for receiving a value upon generation of the XML document; and
- the method further comprises, upon generation of the XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment.

44. (original) At least one medium readable by a data processing device and embodying at least one result of the method of claim 43.

45. (currently) A data processing device comprising:



- the at least one medium according to claim 44; and
- at least one processor configured to
  - use the at least one medium to produce ~~the~~ XML document; and
  - perform the associating and sending operations.

46. (currently amended) At least one medium readable by at least one data processing device and embodying software adapted to perform operations comprising:

- using a pre-established DTD corresponding to the desired XML; and
- based on the DTD and a plurality of data sources, adding annotations to the DTD to create an annotated DTD, such that an XML document generated from the annotated DTD is guaranteed to conform to the DTD.

~~establishing a mapping from lists and scalars corresponding to at least one data source into XML elements and attributes.~~

47. (canceled) The at least one medium of claim 46, wherein the at least one data source comprises at least two data sources, and the data sources are of different types.

48. (original) The at least one medium of claim 46, wherein the data source is a relational database.

49. (currently amended) At least one medium readable by at least one data processing device and embodying software adapted to perform operations comprising

~~The at least one medium of claim 46, further comprising executing the following operation in the data processing device:~~

- ~~• creating a mapping between at least one data source and XML, wherein the mapping is expressed expressing the mapping in constructs of a mapping language.~~

50. (canceled)

51. (currently amended) The at least one medium of claim 4950, wherein the constructs comprise at least one of a value specification and a binding specifications.

52. (currently amended) The at least one medium of claim 4950, wherein

- at least one of the constructs comprises at least one parameter; and
- the at least one of the constructs is adapted so that a value of the at least one of the parameters is determinable at a time of generation of at least one respective XML element associated with the at least one of the constructs.

53. (currently amended) The at least one medium of claim 46, wherein the operations further comprise associating values and or formulas with the DTD.

54. (currently amended) The at least one medium of claim 5346, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct having a repetition symbol at the end.

55. (original) The at least one medium of claim 54, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct which is not a #PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

56. (original) The at least one medium of claim 54, wherein associating includes associating a value or formula producing a value with each PCDATA, choice list, or attribute definition.

57. (original) The at least one medium of claim 54, wherein associating includes, not necessarily in the following order:

- first associating one or more lists of data objects or formulas producing data objects with a DTD construct;
- second associating at least one of the lists or formulas with at least one variable name; and
- using the variable name as a parameter in at least one other formula.

58. (original) The at least one medium of claim 46, wherein the operations further comprise associating at least one respective environment with a respective XML element to be generated.

59. (original) The at least one medium of claim 58, wherein the at least one environment comprises

- information from a parent XML element of the respective XML element; and
- information from a binding specification of a DTD construct associated with the respective XML element.

60. (currently amended) The at least one medium of claim 58, wherein

- the mapping includes at least one respective specification corresponding to at least one respective XML element;
- the specification comprises at least one parameter for receiving a value upon generation of thean XML document; and
- the method further comprises, upon generation of thean XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment.

61. (currently amended) At least one data processing device comprising:

- means for receiving data from at least one data source;
- at least one processor adapted to perform operations comprising:
  - using a pre-established DTD corresponding to the desired XML; and
  - based on the DTD and a plurality of data sources, adding annotations to the DTD to create an annotated DTD, such that an XML document generated from the annotated DTD is guaranteed to conform to the DTD.

~~establishing a mapping from lists and scalars corresponding to the data into XML elements and attributes.~~

62. (canceled) The at least one data processing device of claim 61, wherein the at least one data source comprises at least two data sources, and the data sources are of different types.

63. (original) The at least data processing device of claim 62, wherein the data source is a relational database.

64. (Currently amended) At least one data processing device comprising:

- means for receiving data from at least one data source;

- at least one processor adapted to perform operations comprising:

The at least one data processing device of claim 61, further comprising executing the following operation in the data processing device: creating a mapping between at least one data source and XML, wherein the mapping is expressed ~~expressing the mapping~~ in constructs of a mapping language.

65. (canceled)

66. (original) The at least one data processing device of claim 64, wherein the constructs comprise at least one of a value specification and a binding specifications.

67. (original) The at least one data processing device of claim 64, wherein

- at least one of the constructs comprises at least one parameter; and
- the at least one of the constructs is adapted so that a value of the at least one of the parameters is determinable at a time of generation of at least one respective XML element associated with the at least one of the constructs.

68. (currently amended) The at least one data processing device of claim 61, wherein the operations further comprise associating values and or formulas with thea DTD.

69. (original) The at least one data processing device of claim 68, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct having a repetition symbol at the end.

70. (original) The at least one data processing device of claim 68, wherein the associating includes associating one or more lists of data objects or formulas producing data objects with each DTD construct which is not a #PCDATA, a choice list, or an attribute list, and does not end with a repetition symbol.

71. (original) The at least one data processing device of claim 68, wherein the associating includes associating a value or formula producing a value with each PCDATA, choice list, or attribute definition.

72. (original) The at least one data processing device of claim 68, wherein the associating includes, not necessarily in the following order:

- first associating one or more lists of data objects or formulas producing data objects with a DTD construct;
- second associating at least one of the lists or formulas with at least one variable name; and
- using the variable name as a parameter in at least one other formula.

73. (original) The at least one data processing device of claim 61, wherein the operations further comprise associating at least one respective environment with a respective XML element to be generated.

74. (original) The at least one data processing device of claim 73, wherein the at least one environment comprises

- information from a parent XML element of the respective XML element; and
- information from a binding specification of a DTD construct associated with the respective XML element.

75. (currently amended) The at least one data processing device of claim 73, wherein

- the mapping includes at least one respective specification corresponding to at least one respective XML element;
- the specification comprises at least one parameter for receiving a value upon generation of the XML document; and
- the method further comprises, upon generation of an XML document, sending the at least one parameter a value according to at least one variable/value pair in the at least one respective environment

76. (new) The method of claim 1, wherein the pre-established DTD corresponds to multiple heterogeneous data sources.

77. (new) At least one medium readable by a data processing device and embodying at least one result of the method of claim 76.

78. (new) A data processing device comprising:

- the at least one medium according to claim 77; and
- at least one processor configured to use the at least one medium to produce the XML document based on the mapping.

79. (new) The medium of claim 46, wherein the pre-established DTD corresponds to multiple heterogeneous data sources.

80. (new) The data processing device of claim 61, wherein the pre-established DTD corresponds to multiple heterogeneous data sources.

81. (new) The method of claim 1, wherein the mapping returns at least one scalar value, at least one list of scalar values, and at least one SQL call result.

82. (new) The medium of claim 46, wherein the mapping returns at least one scalar value, at least one list of scalar values, and at least one SQL call result.

83. (new) The data processing device of claim 61, wherein the mapping returns at least one scalar value, at least one list of scalar values, and at least one SQL call result.



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84. (new) The method of claim 1, wherein the mapping is responsive to a user mapping specification.

85. (new) The medium of claim 46, wherein the mapping is responsive to a user mapping specification.

86. (new) The data processing device of claim 61, wherein the mapping is responsive to a user mapping specification.